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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,151	10/20/2003	Sumeet Sandhu	114367-150286	6395

31817 7590 12/12/2007  
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EXAMINER
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ADDY, THJUAN KNOWLIN

ART UNIT	PAPER NUMBER
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2614

MAIL DATE	DELIVERY MODE
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12/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/689,151

Applicant(s)

SANDHU, SUMEET

Examiner

Thjuan K. Addy

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-11, 15-19, 21-25 and 29-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-11, 15-19, 21-25, and 29-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on September 14, 2007 has been entered. Claims 1-5, 7-11, 15-19, 21-25, and 29-31 have been amended. Claims 6, 12-14, 20, and 26-28 have been cancelled. No claims have been added. Claims 1-5, 7-11, 15-19, 21-25, and 29-31 are now pending in this application, with claims 1, 7, 15, 21, and 29 being independent.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/14/2007 has been entered.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7-11, 15-19, 21-25, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US Patent Application, Pub. No.: US 2003/0087673 A1), in view of Voltolina et al (US Patent Application, Pub. No.: US 2005/0233760 A1).

4. In regards to claims 1 and 15, Walton discloses a method and article, comprising: operating in a multiple input, multiple output (MIMO) mode (e.g., MIMO mode) by a transmitter device (See Fig. 5 and base station (BS) 104) of a wireless network (See Fig. 5 and wireless communication system 500) to communicate with a receiver device of the wireless network, the wireless network including at least one transmitter device and a plurality of receiver devices (See Fig. 5 and terminals 106a-106n); observing both physical (PHY) layer (e.g., sub-hypothesis) performance of the receiver device and media access control (MAC) layer (e.g., sub-hypothesis) performance of the transmitter device (for example, one or more sub-hypothesis may further be formed for each hypothesis, with each sub-hypothesis corresponding to specific assignments of a number of transmit antennas to the one or more terminals in the hypothesis, where the performance of each sub-hypothesis is then evaluated); and the transmitter device switching from operating in the MIMO mode to operating in a spatial division, multiple

access mode (e.g., N-SIMO mode or SDMA) (See pg. 1, paragraph [0009]; pg. 1, paragraph [0012] – [0013]; pg. 2, paragraph [0033]; pg. 4, paragraph [0047]; pg. 10, paragraph [0118]; and pg. 10, paragraph [0122] – [0123]) to communicate with the plurality of receiver devices including the receiver device, when poor MAC layer performance below a MAC layer performance threshold is observed for the transmitter device, even though good PHY layer performance above a PHY layer performance threshold is observed for the receiver device (for example, one or more sub-hypothesis may further be formed for each hypothesis, with each sub-hypothesis corresponding to specific assignments of a number of transmit antennas to the one or more terminals in the hypothesis, where the performance of each sub-hypothesis is then evaluated, and one of the evaluated sub-hypothesis is selected based on their performance) (See Abstract and pg. 10, paragraph [0123]). Voltolina, however, further discloses the transmitter device (See Fig. 1 and user equipment (UE) 50A) switching from operating in the MIMO mode (e.g., point-to-point distribution) to operating in a spatial division, multiple access (SDMA) mode (e.g., point-to-multipoint distribution) (See pg. 3, paragraph [0043]). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to employ this feature within the method, as a way of providing reliable and efficient service to users within a mobile communication network.

5. In regards to claims 2, 11, 16, 25, and 30, Walton discloses a method, article, and apparatus, wherein said observing includes observing a latency value of said MAC layer, and said switching is based at least in part on whether the observed latency value

of said MAC layer exceeds a threshold value of not (See Abstract; pg. 3, paragraph [0041]; pg. 6, paragraph [0079]; pg. 8, paragraph [0088]; and pg. 10, paragraph [0123]).

6. In regards to claims 3, 10, 17, and 24, Walton discloses a method and article, wherein said observing includes observing a throughput value of said MAC layer, and said switching is based at least in part on whether the observed throughput value is below a threshold value or not (See Abstract; pg. 7, paragraph [0089] – [0091]; pg. 10, paragraph [0123]; and pg. 12, paragraph [0141]).

7. In regards to claims 4, 8, 18, and 22, Walton discloses a method and article, wherein said observing includes observing a bit error rate of said PHY layer, and said switching occurring even though observing a bit error rate of said PHY layer that is below a threshold value indicating good PHY layer performance (See pg. 7, paragraph [0087]; pg. 7, paragraph [0089]; and pg. 8, paragraph [0099]).

8. In regards to claims 5, 9, 19, 23, and 31, Walton discloses a method and article, wherein said observing includes observing a data rate, a signal-to-noise ratio, or a spectral efficiency of said PHY layer, and said switching occurring even though observing a data rate, a signal-to-noise ratio, or a spectral efficiency of said PHY layer that is above a threshold value indicating good PHY layer performance (See pg. 1, paragraph [0012]; pg. 3, paragraph [0039]; pg. 11, paragraph [0133]; and pg. 15, paragraph [0171]).

9. In regards to claims 7 and 21, Walton discloses a method and article, comprising: operating in a spatial division, multiple access (SDMA) mode (e.g., N-SIMO mode or SDMA) by a wireless transmitter device (See Fig. 5 and base station (BS) 104) of a

wireless network (See Fig. 5 and wireless communication system 500), to communicate with a receiver device of plurality of receiver devices (See Fig. 5 and terminals 106a-106n) of the wireless network, the wireless network including at least one transmitter device and the plurality of receiver devices; observing both physical (PHY) layer (e.g., sub-hypothesis) performance of the receiver device and media access control (MAC) layer (e.g., sub-hypothesis) performance of the transmitter device (for example, one or more sub-hypothesis may further be formed for each hypothesis, with each sub-hypothesis corresponding to specific assignments of a number of transmit antennas to the one or more terminals in the hypothesis, where the performance of each sub-hypothesis is then evaluated); and the transmitter device switching from operating in the SDMA mode to operating in a multiple input, multiple output (MIMO) mode (e.g., MIMO mode) (See pg. 10, paragraph [0118] and pg. 10, paragraph [0122] – [0123]) to communicate with the receiver device, when poor PHY layer performance below PHY layer performance threshold is observed for the receiver device; even though good MAC layer performance above a MAC layer performance threshold is observed for the transmitter device (for example, one or more sub-hypothesis may further be formed for each hypothesis, with each sub-hypothesis corresponding to specific assignments of a number of transmit antennas to the one or more terminals in the hypothesis, where the performance of each sub-hypothesis is then evaluated, and one of the evaluated sub-hypothesis is selected based on their performance) (See Abstract and pg. 10, paragraph [0123]). Voltolina, however, further discloses the transmitter device (See Fig. 1 and user equipment (UE) 50A) switching from operating in the SDMA mode (e.g.,

point-to-multipoint distribution) to operating in a multiple input, multiple output (MIMO) mode (e.g., point-to-point distribution) (See pg. 3, paragraph [0043]). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to employ this feature within the method, as a way of providing reliable and efficient service to users within a mobile communication network.

10. In regards to claim 29, Walton discloses an apparatus, comprising: a transceiver (i.e., transmit-receive antenna) (See pg. 3, paragraph [0038]) to receive signals from a receiver device of a wireless network (See Fig. 5 and wireless communication system 500), the wireless network including at least a transmitter device (See Fig. 5 and base station (BS) 104) and a plurality of receiver devices (See Fig. 5 and terminals 106a-106n), the apparatus being a transmitter device of the wireless network and the receiver device being one of the plurality of receiver devices of the wireless network; at least a part of one of the receiver devices; at least two or more omnidirectional antennas to couple to said transceiver; and a baseband processor to couple to said transceiver, wherein said baseband processor and said transceiver to observe both physical (PHY) layer (e.g., sub-hypothesis) performance of the receiver device and media access control (MAC) layer (e.g., sub-hypothesis) performance of the apparatus (for example, one or more sub-hypothesis may further be formed for each hypothesis, with each sub-hypothesis corresponding to specific assignments of a number of transmit antennas to the one or more terminals in the hypothesis, where the performance of each sub-hypothesis is then evaluated), to switch from a multiple input, multiple output (MIMO) mode to a spatial division, multiple access (SDMA) mode under a first condition (for



example, the first condition may be desired quality of service, maximum latency, average data rate, etc.), and to switch from a spatial division, multiple access mode to a multiple input, multiple output mode under a second condition (for example, the second condition may be a change in the desired quality of service, a change in the maximum latency, a change in the average data rate, etc.) (See Abstract; pg. 10, paragraph [0123]; pg. 11, paragraph [0134]; pg. 12, paragraph [0140] – [0141]; and pg. 13, paragraph [0150]). Voltolina, however, further discloses switching [switch] from a SDMA mode (e.g., point-to-multipoint distribution) to a MIMO mode (e.g., point-to-point distribution) under a second condition (for a example, the second condition may be the change in the number of users within the group of terminals) (See pg. 3, paragraph [0043]). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to employ this feature within the method, as a way of providing reliable and efficient service to users within a mobile communication network.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 1-5, 7-11, 15-19, 21-25, and 29-31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thjuan K. Addy whose telephone number is (571) 272-7486. The examiner can normally be reached on Mon-Fri 8:30-5:00pm.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ahmad Matar can be reached on (571) 272-7488. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Thjuan K. Addy', with a long horizontal flourish extending to the right.

Thjuan K. Addy  
Patent Examiner  
AU 2614